Installation Instructions

LM2B MVOLT DALI Dimming Module

READ AND FOLLOW ALL SAFETY INSTRUCTIONS!
SAVE THESE INSTRUCTIONS AND DELIVER TO OWNER AFTER INSTALLATION

IMPORTANT SAFEGUARDS

When using electrical equipment, basic safety precautions should always be followed including the following:

READ AND FOLLOW ALL SAFETY INSTRUCTIONS.

- Do not use outdoors.
- Use only indoors in dry, relatively clean, non-condensing humidity environments.
- Do not mount near gas or electric heaters.
- Equipment should be mounted in locations and at heights where it will not be subjected to tampering by unauthorized personnel.
- The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
- Do not use this equipment for other than its intended use.

SAVE THESE INSTRUCTIONS

To reduce the risk of death, injury or property damage from fire, electric shock, cuts, abrasions, falling parts, and other hazards:

- Service of the equipment must be performed by qualified service personnel.
- Installation and maintenance must be performed by a person familiar with the construction and operation of this product and any hazards involved. All applicable codes and ordinances must be followed.
- Read this document before installing, servicing, or maintaining this equipment. These instructions do not cover all installation, service, and maintenance situations. If your situation is not covered, or if you do not understand these instructions or additional information is required, contact Acuity Controls.

WARNING

Before installing, servicing, or maintaining this equipment, follow these general precautions.

To reduce the risk of electrocution:

- Make sure the equipment is properly grounded.
- Always de-energize any equipment before connecting to, disconnecting from, or servicing the equipment.

To reduce the risk of fire:

- Use supply conductors with a minimum installation temperature rating as specified.

To reduce the risk of personal injury from cuts, abrasions:

- Wear gloves to prevent cuts or abrasions from sharp edges when removing from carton, handling and maintaining this equipment.
- Do not install damaged equipment.

Acuity Controls, a division of *Acuity Brands* Inc., assumes no responsibility for claims arising out of improper or careless installation or handling of this product.

SAVE THESE INSTRUCTIONS

 © 2014-2015 Acuity Brands Lighting, Inc. All rights reserved. 08/20/15

Part No. 912-00001-008 Rev C

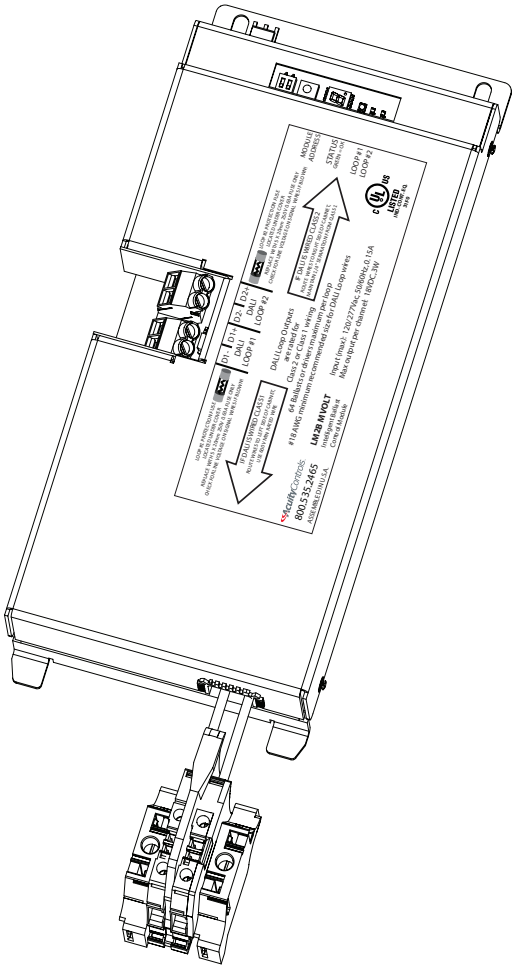
Installation Instructions

LM2B MVOLT DALI Dimming Module

The LM2B intelligent ballast control module can control DALI or EcoSystem intelligent ballasts. Connection to and control of each ballast type from the LM2B power module is identical. The LM2B contains (2) DALI networks, and can control a maximum of 128 ballasts per module, with a maximum 64 ballasts per Dali network. The LM2B is intended for 120- 277V, 50/60Hz. See below for full details.

Important Module Information

1. Ambient Conditions:
   Maximum Ambient Temperature: 104°F/40° C
   Minimum Ambient Temperature: 32°F/0°C
   Relative Humidity:10-90% Non condensing.
2. The LM2B MVOLT module is rated for 120-277V, 50/60 Hz operation.
   Maximum ratings:
   Max input: .15A
   Max Dali load per module: 6W
   Max load per Dali Loop: 3W
3. Verify that the load type being connected is compatible with the dimmer module type and capacity as listed on the module label.
4. Each LM2B module is powered by a **single phase branch circuit.**
5. Test all dimmed circuits for short circuits **prior** to energizing the module.
6. Use only copper conductors with 90°C insulation rating or higher.
7. The LM2B Intelligent Ballast Control output connections are either Class 1 or Class 2 circuits, and should be installed in accordance with the National Electric Code and any local codes which may apply. For specific information on conductor routing for your application, consult the ballast manufacturer's recommendations.
8. A maximum of 64 DALI//EcoSystem ballasts can be connected to a single LM2B DALI network. The LM2B power module contains two DALI networks, with a single power supply for both networks. Each LM2B power module supports a maximum of 128 DALI/EcoSystem ballasts.
9. Each LM module is bonded to the mounting surface using the (2) supplied #8-18 x 5/16" type B serrated mounting screws. Both screws must be used and torqued to a min 15 inch-lbs to insure a good ground. If these screws are lost replace ONLY with screws of this type to insure proper grounding.



LM2B Dimmer Module

LM2B Compatible Load Types

LM2B Compatible Load Types
- DALI
- Lutron EcoSystem

 © 2014-2015 Acuity Brands Lighting, Inc. All rights reserved.

Installation Instructions

LM2B MVOLT DALI Dimming Module

Before You Start

1. Disconnect power prior to installation or servicing.
2. Install in accordance with the National Electrical Code and any other codes which may apply.
3. Use only as intended and to control only loads described in these instructions.
4. Use only accessories recommended by Acuity Controls.
5. Use only at the voltage listed on the product and component labels.

Module Installation and Wiring

1. MOUNT DIMMER MODULE(S)
   LM2B Dali modules should be mounted below any other type of dimming modules (LM4A, LM4D etc). Mount the LM module by inserting the mounting tabs into the slots in the back of the enclosure. Secure it with the (2) mounting screws provided. *See Figures 1 and 3* for details.
2. CONNECT MODULE DATA NETWORK
   Connect the module data network connector to the terminal on the side of the LM module. *See Figures 1 and 2* for details.
3. Repeat steps 1 & 2 for additional modules.
4. PROVIDE PRIMARY POWER WIRING TO MODULE INPUT TERMINAL
   Each module MUST be fed with a single phase 15A or 20A input circuit. Connect each module's feed input terminal blocks (hot and neutral) to the branch breaker and neutral bar in the LMP panel (See *Figure 5)*, or to a separate breaker panel if used in a feed through application (See *Figure 6)*. Use an appropriately sized conductor. Torque the terminal block screws to 8.9 inch-lbs.
5. CONNECT LM2B NETWORK OUTPUT(s) TO INTELLIGENT BALLASTS
   Each LM2B ballast network contains a pair of control wires. The control pair(s) should be terminated on the LM2B output terminal blocks on the power module, See *Figure 7 for details.*
   A maximum of 64 DALI/EcoSystem ballasts can be connected to each LM2B output.
6. ENERGIZE MODULE
   1. Turn on the circuit breaker feeding the LM2B power module.
   2. Turn on the circuit breaker(s) supplying power to the DALI ballasts.
7. VERIFY MODULE COMMUNICATION
   The module's status LED will illuminate green to indicate there is communication with the LMP controller.
   See Figure 1 for details. (Controller power must be on)
8. POWER MODULE CONFIGURATION
   The LM2B module and all Dali outputs are fully programmable using a Fresco Touchscreen station.

 © 2014-2015 Acuity Brands Lighting, Inc. All rights reserved. 08/20/15

Dali Ballast\Driver Addressing and DMX Assignment

CONFIGURING DALI BALLAST\DRIVER AND ADDRESSING

The Dali ballasts\drivers need to have their addresses set before proper dimming operation can begin. A Fresco station is required to set the Dali addresses. The LM2B Dali module contains 2 Dali loops, each with a maximum of 64 ballast outputs per loop for a total of 128 outputs. (Dali outputs are numbered 0 - 127). A Fresco station displays Dali outputs as subdevices numbered 1 - 128.

To allow for control of the Dali outputs, a corresponding DMX address is also assigned to each Dali output (subdevice). This allows a Fresco station to control the Dali dimmers.

Default DMX addressing starts at 1 and continues to 128, with 512 being the maximum possible DMX value.

Default values for Dali and DMX addresses are:

Dali loop 1, address 0 = DMX address 1, subdevice 1 TO
Dali address 63 = DMX address 64, subdevice 64

Dali loop 2, address 64 = DMX address 65, subdevice 65 TO
Dali address 127 = DMX address 128, subdevice 128

Each Dali output is displayed as a subdevice on Fresco station menus.

Note: The default Dali to DMX address assignment can be changed to any desired setting.

SETTING DALI BALLAST ADDRESSES

The Dali ballast\driver addresses can only be set using a Fresco touchscreen station. Follow the steps below:

1. On the Fresco station navigate to the SETUP screen.
2. Select the RDM menu.
3. In the list of modules, select the LM2B module desired to expand the list.
4. Select Device parameters to expand the list.
5. Select Dali Address Loop All, then choose either loop 1 or 2 by entering 1 or 2. All ballasts will be addressed.
6. Select OK. Each Dali ballast will be assigned a unique address. The locations of the ballast addresses are assigned randomly. If desired, use the Fresco station to change the Dali ballast address to an address other than what was assigned.

OR

Select Dali Address Loop New to add any newly added Dali ballasts. This assigns new ballasts to address values above any previously assigned without disturbing existing address assignments.
Select OK. The Dali ballasts will be assigned addresses above any existing values.

If desired, use a Fresco station to change the Dali ballast address to an address other than what was assigned.

IDENTIFY

Use the Identify function to flash each ballast to locate it in the space. Follow the steps below:

1. On the Fresco station navigate to the SETUP screen.
2. Select the RDM menu.
3. In the list of modules, select the LM2B module desired (the selected text will turn blue). Selecting the LM2B module will flash all the Dali ballasts on the module. To flash a single output, select the desired output (subdevice). (the selected text will turn blue)
4. Select IDENTIFY. The ballast(s) selected will flash its loads on and off. Press OK to stop.

CHANGING DALI ADDRESS

Each Dali ballast address can be assigned an address other than the value randomly assigned to it. Use of the IDENTIFY function makes this task easier as you can visually locate each specific ballast. Follow the steps below:

1. On the Fresco station navigate to the SETUP screen.
2. Select the RDM menu.
3. In the list of modules, select the desired LM2B module to expand the list.
4. Select Device parameters to expand the list.
5. Select Module ID. A number entry window will open. Enter the new address and press OK

Repeat for any additional Dali ballasts.

DMX ADDRESSING

Each Dali dimmer (subdevice) can be assigned to any DMX address. More than one Dali dimmer can be assigned to the same DMX address. This allows for easy software grouping of dimmers for control. Follow the steps below:

1. On the Fresco station navigate to the SETUP screen.
2. Select the RDM menu.
3. In the list of modules, select the desired LM2B module to expand the list and show the outputs (subdevices).
4. Select the desired output (subdevice) to expand its list.
5. Select DMX Start Address. A number entry window will open. Enter the new DMX address and press OK

Repeat for any additional Dali outputs.

To have ALL the DMX addresses on an LM2B module set sequentially above a selected address, choose DMX Start Address under the Device Parameters menu and set the desired address start value.

Note: This will remove and reset any prior DMX addressing set.

 © 2014-2015 Acuity Brands Lighting, Inc. All rights reserved. 08/20/15

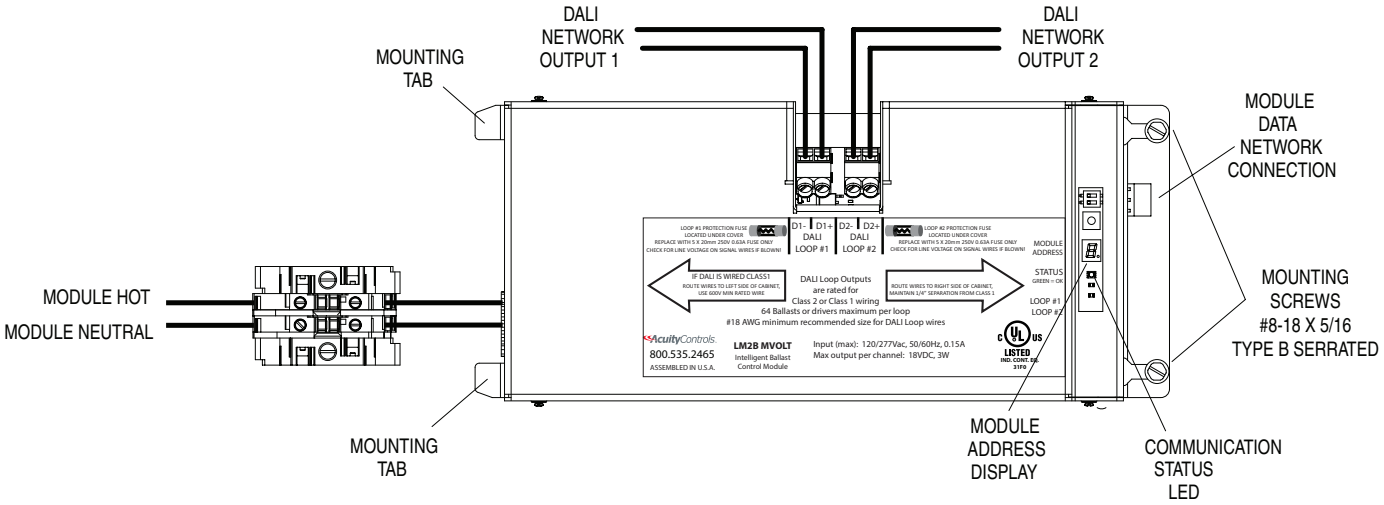


Figure 1 - LM2B Details

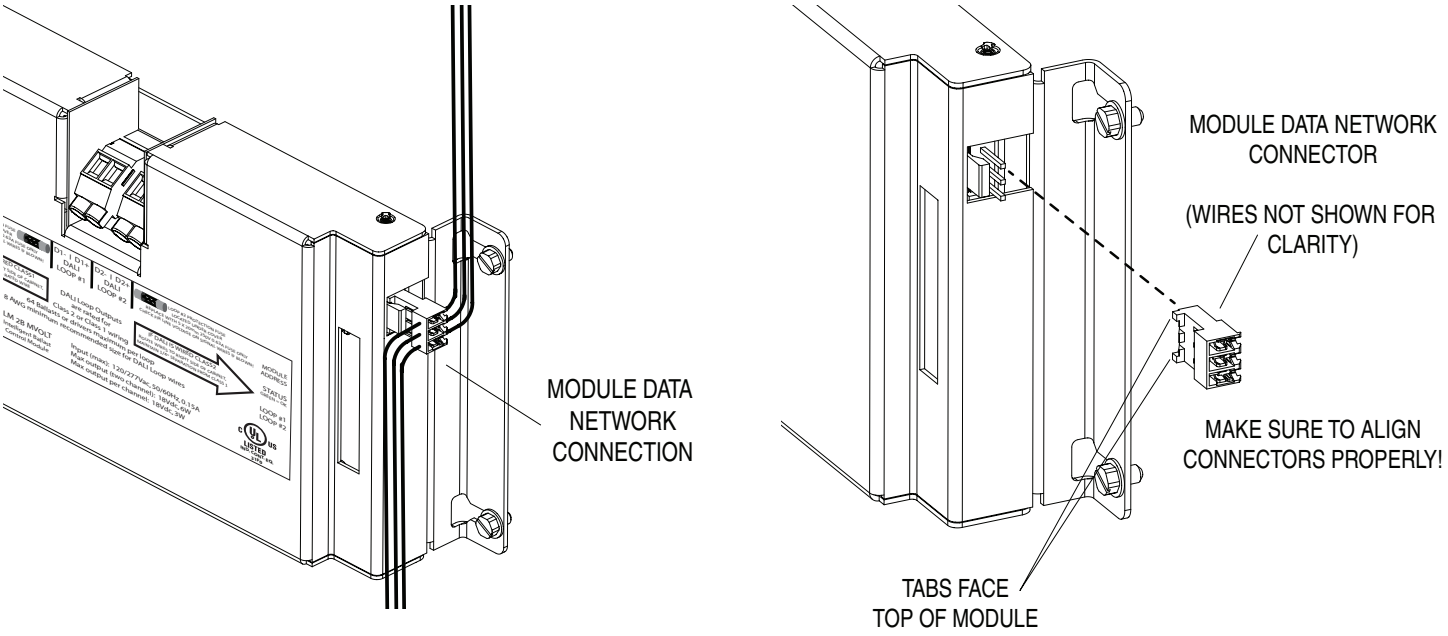


Figure 2 - LM2B Module Data Network Connector

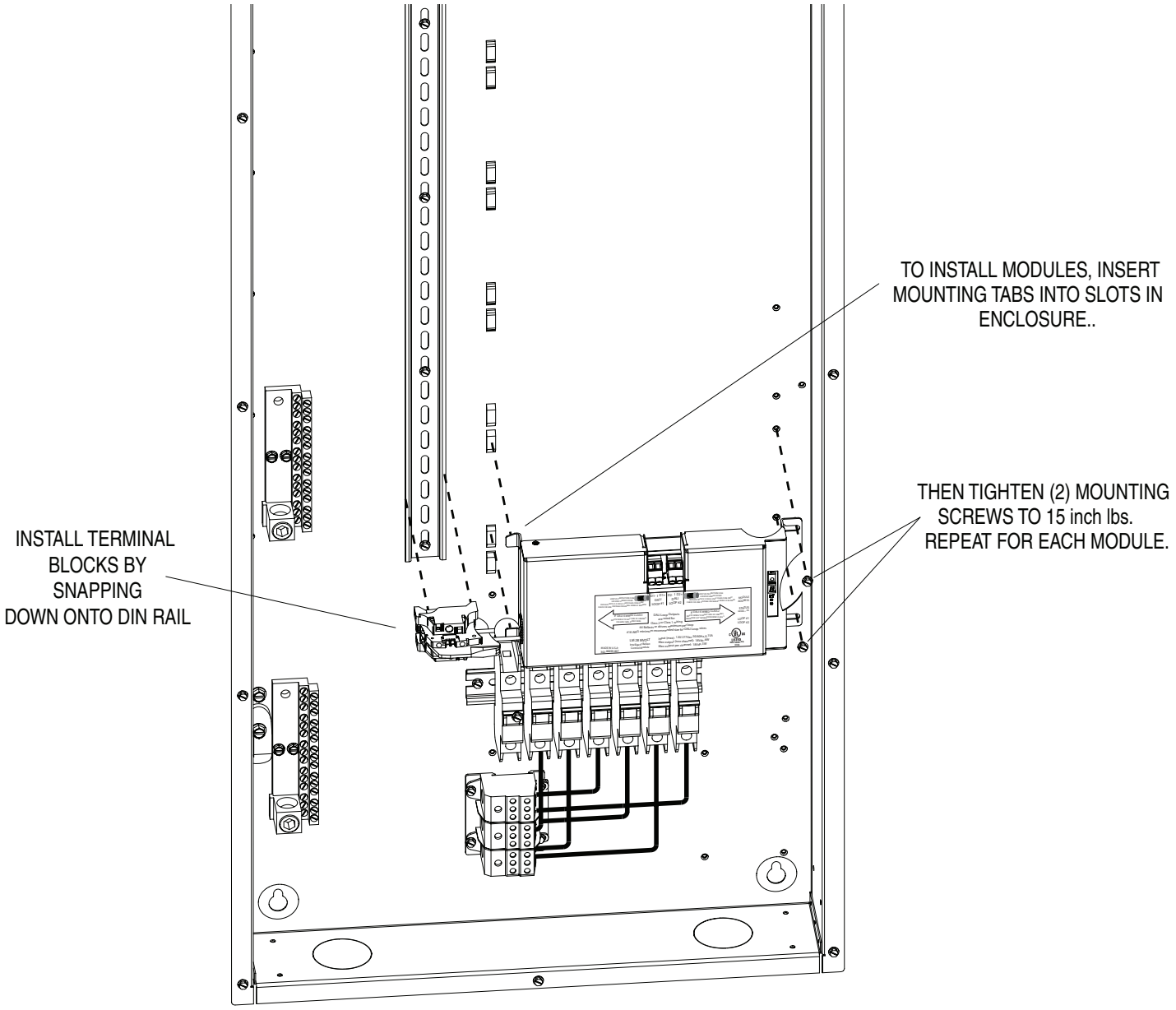

TO INSTALL MODULES, INSERT MOUNTING TABS INTO SLOTS IN ENCLOSURE..
THEN TIGHTEN (2) MOUNTING SCREWS TO 15 inch lbs. REPEAT FOR EACH MODULE.
INSTALL TERMINAL BLOCKS BY SNAPPING DOWN ONTO DIN RAIL

Figure 3- LM2B Module Mounting

 © 2014-2015 Acuity Brands Lighting, Inc. All rights reserved.

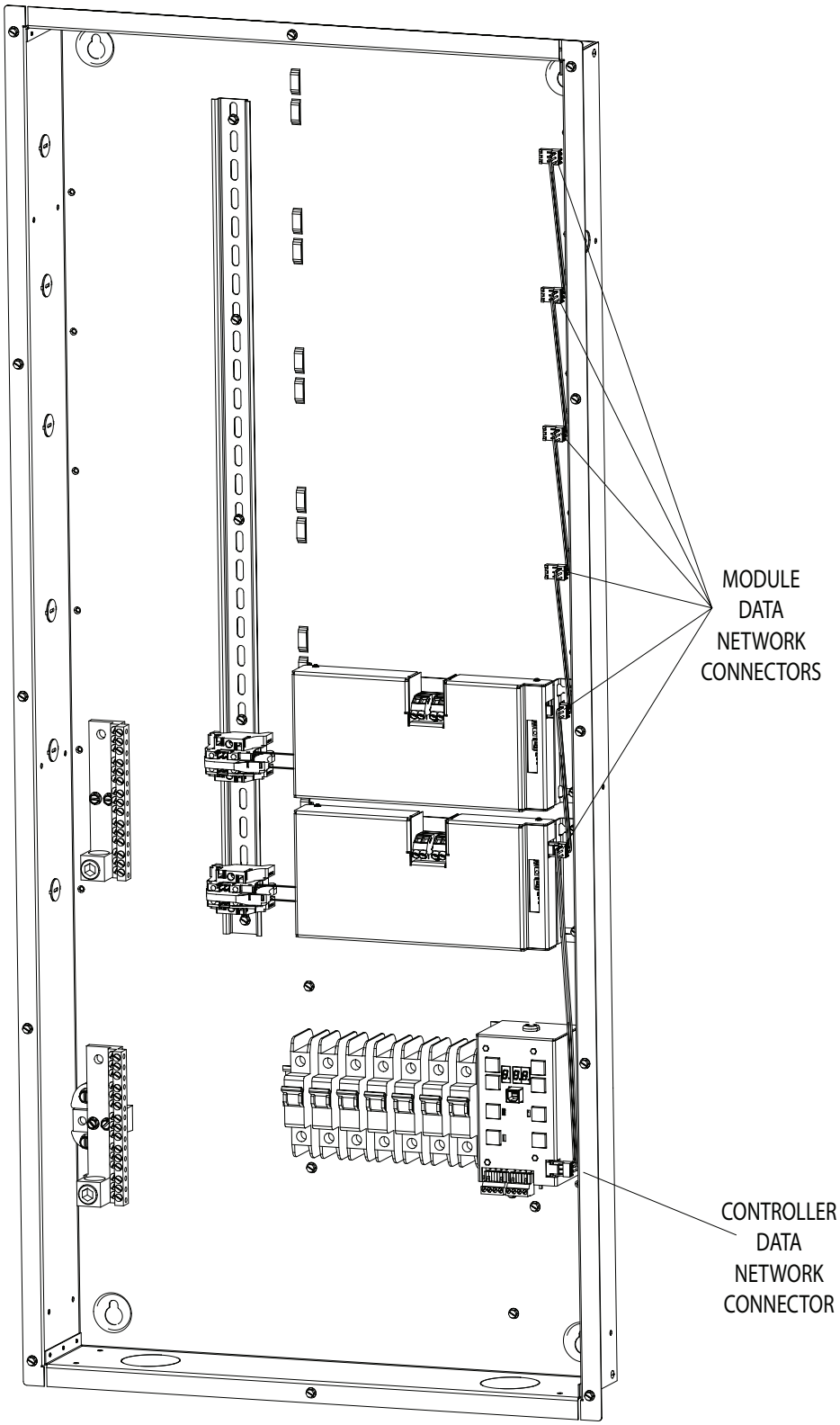


Figure 4 - Module Data Network Connectors

 © 2014-2015 Acuity Brands Lighting, Inc. All rights reserved. 08/20/15

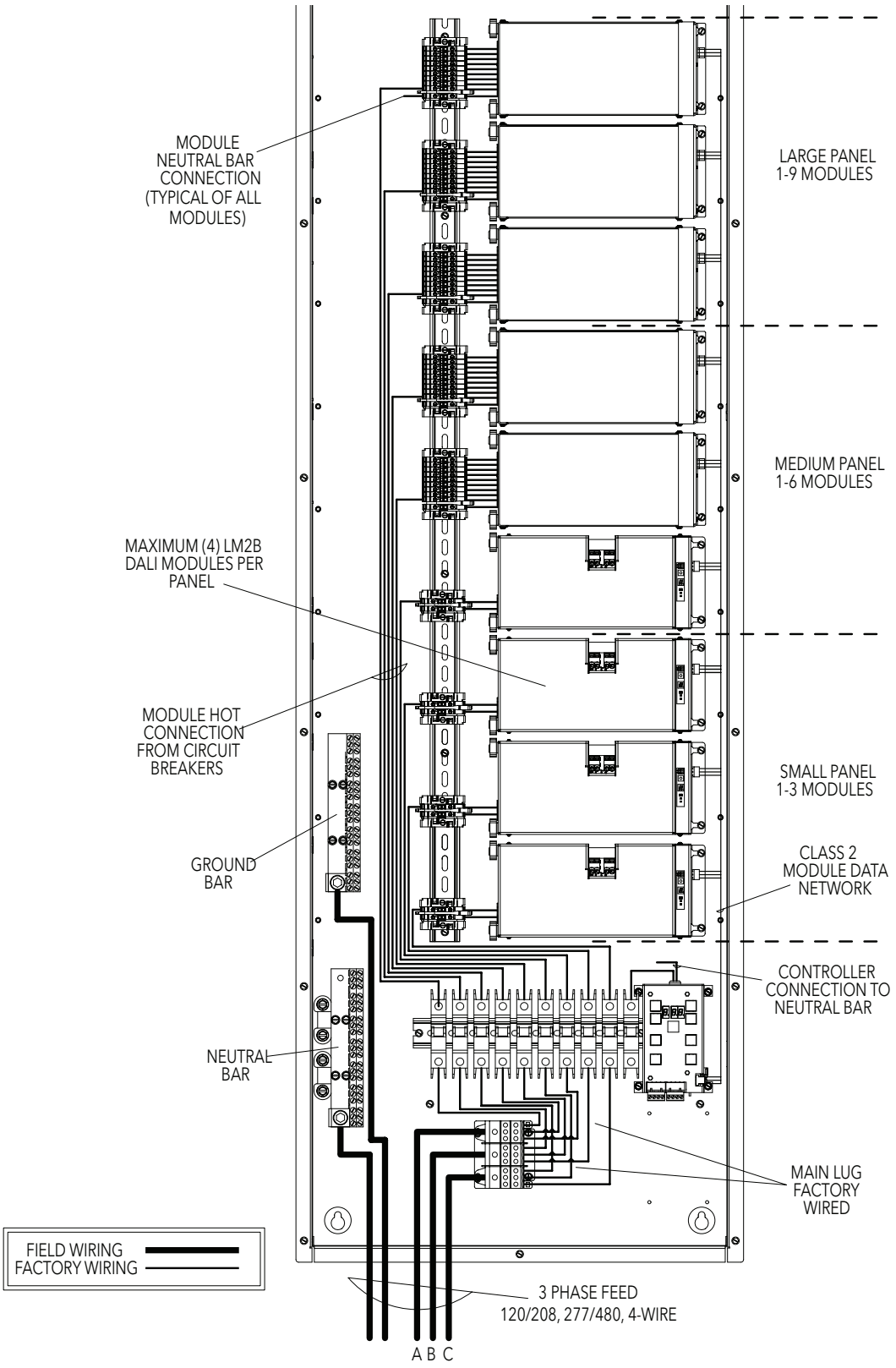

MODULE NEUTRAL BAR CONNECTION (TYPICAL OF ALL MODULES)
LARGE PANEL 1-9 MODULES
MEDIUM PANEL 1-6 MODULES
MAXIMUM (4) LM2B DALI MODULES PER PANEL
MODULE HOT CONNECTION FROM CIRCUIT BREAKERS
SMALL PANEL 1-3 MODULES
GROUND BAR
CLASS 2 MODULE DATA NETWORK
CONTROLLER CONNECTION TO NEUTRAL BAR
NEUTRAL BAR
MAIN LUG FACTORY WIRED
FIELD WIRING
FACTORY WIRING
3 PHASE FEED 120/208, 277/480, 4-WIRE
A B C

Figure 5 - LM2B MVOLT Module Feed to Circuit Breaker Wiring Details - Main Lug Panel

 © 2014-2015 Acuity Brands Lighting, Inc. All rights reserved.

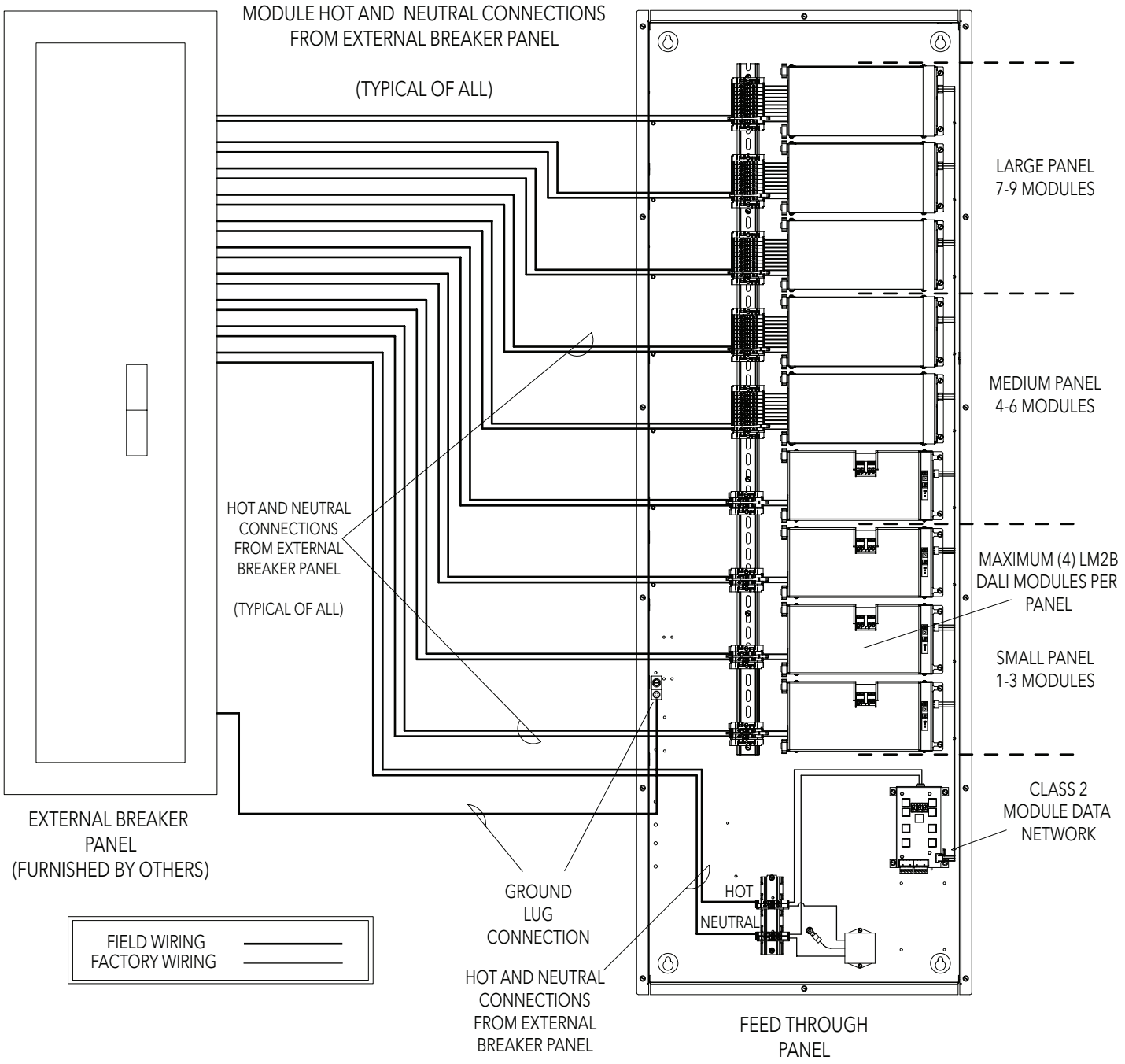

MODULE HOT AND NEUTRAL CONNECTIONS FROM EXTERNAL BREAKER PANEL
(TYPICAL OF ALL)
LARGE PANEL 7-9 MODULES
MEDIUM PANEL 4-6 MODULES
MAXIMUM (4) LM2B DALI MODULES PER PANEL
SMALL PANEL 1-3 MODULES
CLASS 2 MODULE DATA NETWORK
HOT AND NEUTRAL CONNECTIONS FROM EXTERNAL BREAKER PANEL
(TYPICAL OF ALL)
EXTERNAL BREAKER PANEL (FURNISHED BY OTHERS)
GROUND LUG CONNECTION
HOT
NEUTRAL
HOT AND NEUTRAL CONNECTIONS FROM EXTERNAL BREAKER PANEL
FEED THROUGH PANEL
FIELD WIRING
FACTORY WIRING

Figure 6 - LM2B Module Feed Wiring Details - Feed Through Panel

 © 2014-2015 Acuity Brands Lighting, Inc. All rights reserved. 08/20/15

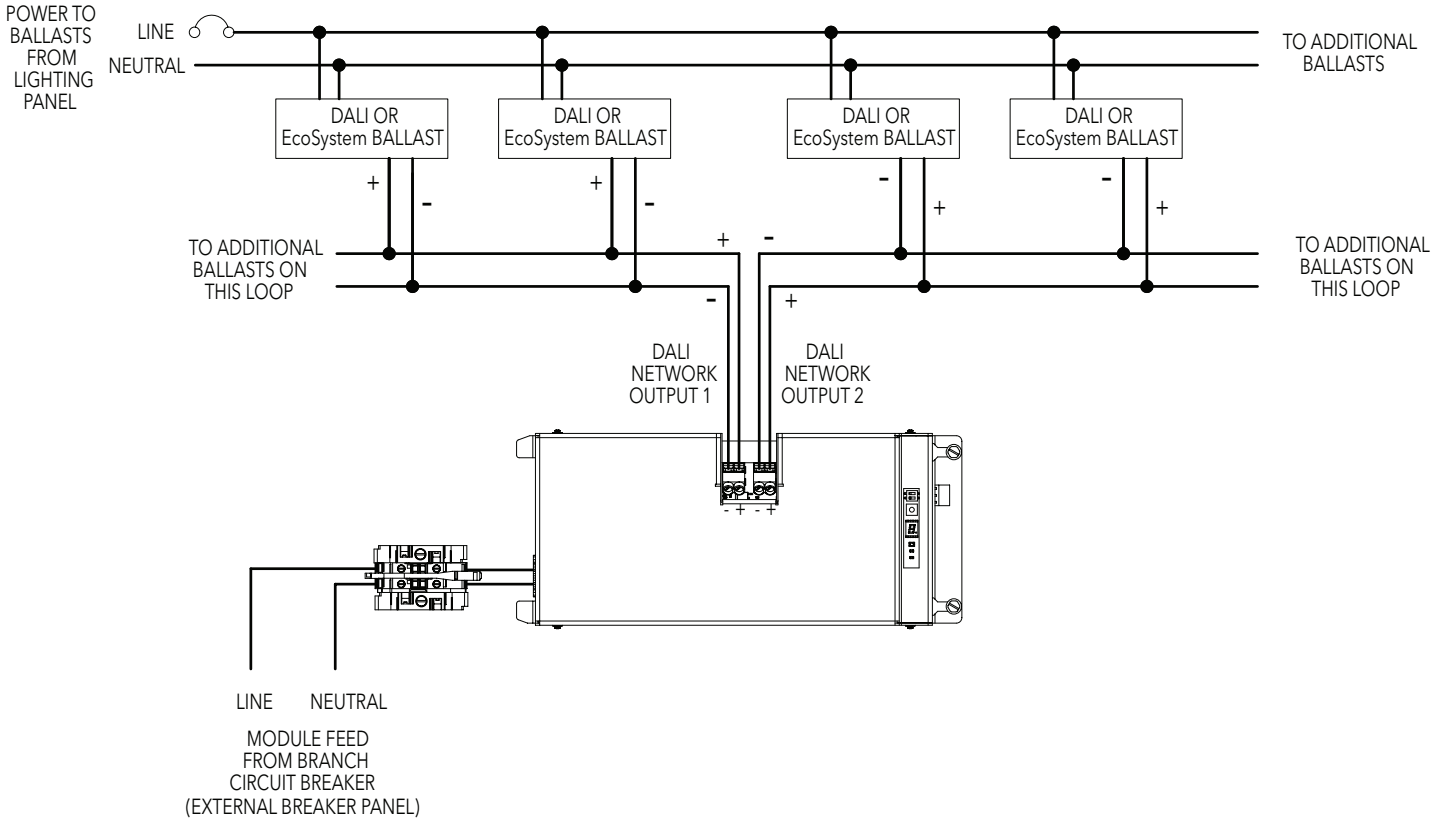


Figure 7 - LM2B Load Wiring Details

 © 2014-2015 Acuity Brands Lighting, Inc. All rights reserved.

Troubleshooting		
7 Segment Display Error Code[1]:	Red Status LED:	
"E1"	Solid **Red**	**Error: Communication signal missing or distorted** 1. Check the communication wire harness connections and ensure that the plugs are fully inserted into the module and controller connectors. 2. Inspect the communication wires and repair or replace the wire harness if it is damaged. 3. Consult the factory for additional troubleshooting steps if the communication wires and connections appear OK.
"E3"		**Error: DALI loop #1 or #2 is overloaded or shorted** 1. Disconnect the control wires from DALI loop terminals, open the module cover to inspect fuses, inspect the DALI loop control wires and drivers/ballasts connected to DALI loop terminal with the blown fuse and remove any miswire or faulty DALI driver/ballast; replace the fuse before reconnecting the DALI loop control wires. 2. Disconnect each DALI loop control wires from the module and check for short circuits; correct any that are found before reconnecting the DALI loops control wires. 3. Consult the factory if the DALI drivers/ballasts and wiring are not causing this error.
"E4"		**Error: Both DALI loops are overloaded or shorted, electronics failure** 1. Disconnect wires from both DALI loops #1 and #2 to clear the error, open the module cover to inspect fuses and replace if open, remove any miswire or faulty DALI driver/ballast before reconnecting the DALI loops control wires. 2. Disconnect wires from both DALI loops #1 and #2 to clear the error, check wiring and DALI drivers/ballasts for short circuits; correct any that are found before reconnecting the DALI loops controls wires to the module. 3. Check the ambient temperature around the panel: 400C max. 4. Check if other modules inside the panel are overheating. 5. Consult the factory.
1. Note that "E" will flash for 0.5s followed by "#" for 0.5 seconds.		

© 2014-2015 Acuity Brands Lighting, Inc. All rights reserved. 08/20/15